

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-9 remain pending in the present application. No new matter has been added.

By way of summary, the Official Action presents the following issues: Claims 1-9 stand rejected under 35 U.S.C. § 103 as being obvious over Nakano (U.S. Patent No. 6,011,787 in view of Tsutsui (U.S. Patent No. 6,385,181, hereinafter Tsutsui).

Applicants thank the Examiner for the courtesy of a telephone interview extended to the Applicants' representative on July 25, 2006. During the interview, the rejections noted in the outstanding Office Action were discussed; however, no agreement was reached pending the Examiner's further review of the response, as filed. Comments presented during the interview are reiterated below.

REJECTION OF UNDER 35 U.S.C. § 103

The Office Action has rejected Claims 1-9 under 35 U.S.C. § 103 as being unpatentable over Nakano in view of Tsutsui. The Official Action states that Nakano discloses all of the Applicants' claim features with the exception of notifying a downlink transmission method showing that directional beams are transmitted. However, the Official Action cites Tsutsui as disclosing its more detailed aspect of the Applicants' advancements and states that it would have been obvious to one of the ordinary skill in the art at the time the advancements was made to combine the teachings of the cited references to arrive at the Applicants' claim limitations. Applicants respectfully traverse the rejection.

By way of background, direct sequence CDMA systems are known in which a plurality of mobile stations perform radio communication using the same frequency band. In such systems, as the number of mobile stations increases in a given area, the signal from a

specific mobile station is influenced by the interference signal power from other mobile stations. Interference cancellation techniques are employed such as adaptive antenna array diversity to address increased interference. In such schemes, pilot symbol assisted interference cancellation techniques are utilized. This cancellation technique produces interference vectors which are utilized to compensate received signals for a detected level of interference. Pilot symbols are conveyed to mobile stations via a common pilot channel and an individual channel. Generally, when the base station does not support transmission of directional beams, the mobile station performs channel estimation (interference cancellation) with that the pilot symbols in the common pilot channel transmitted using non-directional beams. Likewise, when the base station supports transmission of directional beams, the base station forms directional beams in the direction of the required signal, and transmits the individual pilot symbol channel using the directional beams. Depending upon the use of directional beams or non-directional beams, the power level of the pilot symbols inserted into the individual channel may be less than the power of the pilot symbols inserted in the common pilot channel; in this way, channel estimation is degraded.¹

In light of the above the deficiencies in the art, the present advancements is provided. With at least this object in mind, a brief summary of the claimed advancements in view of the cited references is believed to be in order.

Applicants' Claim 1 recites, *inter alia*, a radio communication method including:

. . . notifying a receiving function showing that it is possible to receive directional beams, from a first mobile station which can receive directional beams to a first base station which can receive directional beams;

changing a format of an individual channel which is to be transmitted using directional beams by the first base station . . .

¹ Application at pages 1-7.

Nakano describes a CDMA mobile communication scheme including base stations (1) and (2) for supporting communication with the communication network (90) which is formed of a plurality of sectors. Each base station transmits a perch channel using a spread code assigned to each base station.² A mobile station 92 is provided to communicate with a base station. The perch channel of the base stations is amplified and transmitted toward three sectors from antennas (11a), (11b), and (11c). Thus, an identical perch channel is transmitted to all three sectors, rather than using different perch channels for different sectors. In this way, the sector selection is made by the base station side, so that there is no need to make the selection of the mobile station.³

Tsutsui describes an array antenna system including a beam former (12) for generating directional beams (B₁-B₄). Despread/delay adjusting units are provided for despread/delay adjusting units. Measurement units (14) are provided to measure the power or correlation values of the beams that enter the despread/delay adjusting units. A beam selected (15) selects and outputs despread signals corresponding to selected beams for which a measured value of power is greater than a set value or to a prescribed number of beams the measure values of which have been arranged in descending order.⁴

Conversely, in an exemplary embodiment of the Applicants' advancements, a radio communication system and associated method are provided in which a base station determines whether or not a mobile station can receive directional beams based upon a notification provided by the mobile station. Additionally, Applicants' Claim 1 recites changing a format of an individual channel, which is to be transmitted using directional beams by the first base station. The portion of Nakano cited in the Official Action (column 5,

² Nakano at column 5, lines 55-65; Figure 1.

³ Nakano at column 8, lines 19-33

⁴ Tsutsui at column 7, lines 38-60

lines 58 through column 6, line 4) describes only that a base station (1) transmits the same downlink spread code from Sector-2 and Sector-3 with respect to the mobile station (92).

Specifically, Nakano describes only a mobile station capable of receiving a perch channel, which is transmitted toward 3 sectors. In response to the perch channel transmission, a specific sector is selected based upon the location of the mobile unit.⁵ This feature is not disclosed or suggested by the cited combination of art. Likewise, as independent Claim 8 recites substantially similar limitations to that discussed above, Applicants respectfully submit that this claim and any claim depending therefrom is also allowable over the cited combination of references. Accordingly, Applicants respectfully request that the rejection of Claims 1-9 under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present application, including Claims 1-9, is patentably distinguishable over the prior art, is in condition for allowance, and such action is respectfully requested at an early date.

Respectfully submitted,

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⁵ Nakano at column 8, lines 19-39; column 13, lines 1-28.